Minutes of spin meeting 08/01/07

Carlos presented the beam profile and polarization profile measurements from run6 with RHIC CNI polarimeters. In analyzing the run6 polarization data, a systematic error has to be assessed for the polarization profile effect. The question is how much we can believe the profiles (both beam and polarization) from the polarimeters which are known to have target issues (mechanism, target tightness). Gerry pointed out that there are two ways to assess the systematic error. One is to use the target position information and the other one is to use purely the normalized count rate.

The horizontal beam profiles sometimes are non-Gaussian, and it even changed from Gaussian to non-Gaussian in the same fill. Waldo commented that the non-Gaussian profile is possible (not non-physical). Since we do have profiles from IPM measurements, this can be cross checked to distinguish between real profile change and polarimeter problem. All vertical beam profiles at 100GeV are non-Gaussian, but 31GeV ones were OK. However, the intensity was lower for the 31GeV running period. Woody suggested that the vertical injection kicker may cause some residual coherence but Vadim pointed out that the damper was used all the time. Another candidate as Waldo pointed out was the optics changes during β squeeze, which were different for 100GeV and 31GeV run. The polarization profiles seem to have two states: one is flat (with σ of 13mm) and one is narrow (with σ of 4mm). There are questions about the legitimacy of averaging the whole fill polarization profile and beam profile, as we know the polarization drops and emittances grow over the store time. Carlos commented that he separated the first and second halves of a whole store but did not see much difference. As a cross check, we will compare emittance from IPM for the samples Carlos presented today to see if the beam profiles indeed were flatter sometimes and if there is any correlation between machine settings/emittance and flatness of the polarization profiles. Carlos will also look at some injection polarization measurements (not many during the whole run6) to see if the profiles vary at injection.

Alfredo presented the results on the AGS helical snake angle as functions of four transverse dimensions (x, x', y, y') for a 2T cold helical partial snake. The next thing is to translate this into resonance strength and estimate the effect on spin. The important thing is to take these orbit dependence into account for spin tracking.

Haixin